REMARKS

Claims 12-21 are pending in the present application, and substituted for cancelled claims 1-9 and 11. Claims 1-9 and 11 have been canceled without prejudice.

Examiner has rejected claims 1-9 and 11 under § 102(b) based on Teder et al (U.S. 5,828,659). In rejecting the claims, Examiner notes, the cited reference discloses "transmitting the downlink data frame time offset information from a cell to the mobile station", and such information is included in an Active Set Update message from the cell to the mobile station. Applicant has reviewed the cited reference, and does not find any recitation or suggestion of transmitting the downlink data frame time offset information from a cell to the mobile station, and such information is included in Active Set Update message from the cell to the mobile station.

The cited reference although is concerned with the data frame time offset, it fails particularly to disclose or suggest that the down link data frame time offset is needed to be transmitted to the mobile station. The reference notes parameters *lanada1* and *landa2* as those down link data frame time offsets in each base station, but fails to disclose that such data frame time offset is transmitted to the mobile station. In fact, the solution provided by the reference does not foresee such a need since it assumes the mobile station is able to soft combine the data symbols regardless. At various places in the reference, and in particular Col. 10, the reference states the assumption that the delay difference needs to be bounded within a limit, otherwise, the transmission of data from each base station in accordance with the down link data frame time offset may occur in two different time frames. There is no way for the mobile station to know, in accordance with the reference, the determined down link data frame time offset in order to perform soft combining operation of received data symbols from at least two base stations. Therefore, the mobile station would be lost in its timing to decide when and what data symbols need to be combined in the soft combining process of down link transmissions of a data frame from two different base stations.

Generally, a mobile station in soft handoff operation receives and combines multiple signals transmitted from different cells in order to improve the overall decoding and

demodulation of the information. The signals transmitted from the cells involved in the soft handoff operation carry the same information. The mobile station after decoding and demodulating the signals combines the data metrics in a soft summing operation to add the data energy. As a result, the information data is received with less error. When performing the soft-combining operation, it is important that the mobile combines the matching symbols received from the cells involved in soft handoff. For example, the first symbol of a particular frame from a first cell needs to be combined with the first symbol of the matching frame from a second cell, and so on. The mobile station needs to know the frame timing of the data signals from each cell. Due to factors including the possibility of cell timing being asynchronous with each other, the possible timing offset between the PN spreading code frame timing and the data frame timing, and the uncertainties in the propagation delay, the mobile cannot necessarily rely on the arrival timing of the symbols from each cell to determine which symbols should be combined. Various aspects of the claimed invention provide for the mobile station to be informed of the data frame time offset of each downlink signal transmitted by each cell involved in a soft handoff operation at the mobile station.

The cell in connection with its base station controller sets data frame time offset for a downlink physical channel intended for the mobile station. For example, the primary common control physical channel is used as a timing difference for all physical channels, directly for the downlink and indirectly for the uplink. The dedicated physical channels intended for communication of data and voice information are set in a data frame time offset from common control and pilot physical channels. The data frame time offset is set in a multiple of 256 chips from the common control and pilot physical channels. The mobile station transmits a report message based on the measurement of the signals, such as the sync and the common pilot signals, for each cell within a range. Each report message contains the time delay difference measurement between the uplink timing and the downlink PN sequence frame timing from each cell (i.e. common and pilot channel frame timing) and an SFN number. The time delay may not necessarily be in increment of 256 chips, where the data frame time offset is set in a multiple of 256 chips. Therefore, the mobile station would not be able to know the data frame time offset based on its own delay measurements. The propagation distance from each base station to the mobile station may be different. The observed time difference measured by the mobile station

for each cell may be different. The downlink data frame time offset is set by each cell based on its corresponding measurement report. Each cell may be operating on its own timing synchronously or asynchronously. The possibility of propagation time relationships changing between the time of measurement report and the start of the soft combining operation leaves ambiguities for the mobile station for soft combining operation. Therefore, the mobile station can not rely on its own measurement(s) to decide the proper timing for soft combining operation. As such, the cell need to determine the data farm time offset based on the measurement report from the mobile station, and communicate that to the mobile station while setting the same timing at the base stations for downlink communications to the mobile station. The data frame time offset in accordance with an aspect of the invention is in a multiple of predetermined number of chips (for example 256 chips), where the reported delay measurements from the mobile station may be in any increments (i.e. increments of 1 chip).

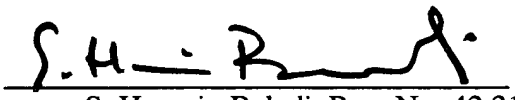
The references cited by the examiner fail to suggest or disclose a method and an apparatus for a CDMA communication system by first measuring downlink time offset experienced at a mobile station between downlink transmissions from base stations, and communicating the measured time offset from the mobile station to at least one of the base stations. At the base station (or its controller), a downlink data frame time offset is determined based on the measured time offset. In accordance with an aspect of the invention, the downlink data frame time offset is in a multiple of predetermined number of chips. Furthermore, the downlink data frame time offset information is communicated to the mobile station.

REQUEST FOR ALLOWANCE

In view of the foregoing, Applicant submits that all pending claims in the application are patentable. Accordingly, reconsideration and allowance of this application are earnestly solicited. Should any issues remain unresolved, the Examiner is encouraged to telephone the undersigned at the number provided below.

Respectfully submitted,

Dated: July 13, 2004

By: 

S. Hossain Beladi, Reg. No. 42,311
(858) 651-4470

QUALCOMM Incorporated
5775 Morehouse Drive
San Diego, California 92121
Telephone: (858) 658-5787
Facsimile: (858) 658-2502